IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICANT:	Abraham P. Ittycheriah	EXAMINER: Foster, Roland G.
SERIAL NO.:	09/505,807	GROUP ART UNIT: 2645
FILED:	February 17, 2000	Docket: YO999-195 (8728-281)
FOR:	SYSTEM AND METHODS FOR PROCESSING AUDIO USING MULTIPLE SPEECH TECHNOLOGIES	

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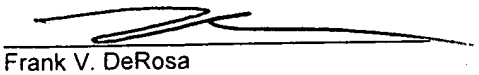

Frank V. DeRosa

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants: Ittycheriah, et al..

Examiner: Roland G. Foster

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For: Systems and Methods For Processing Audio Using Multiple Speech Technologies

APPEAL BRIEF

Appeal from Group 2645

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TABLE OF CONTENTS **Page(s)**

I. INTRODUCTION 1

II. REAL PARTY IN INTEREST 1

III. RELATED APPEALS AND INTERFERENCES 1

IV. STATUS OF CLAIMS 1

V. STATUS OF AMENDMENTS 2

VI. SUMMARY OF THE INVENTION 2-3

VII. ISSUES 3-4

VIII. GROUPING OF CLAIMS 4

IX. ARGUMENTS 4

A. At the very minimum, Woodring is Legally Deficient to Establish a *Prima Facie* Case Of Anticipation Against Claims 1, 16 and 23 4-9

B. Woodring is Legally Deficient to Establish a *Prima Facie* Case of Anticipation Against Claims 3-6, 8, 17, 18, 20, 24, 25 and 27 9-11

C. The Claim Rejections Under 35 U.S.C. § 103 are Legally Deficient 11

C Conclusion 11-12

APPENDIX A (Pending Claims) 13-18

I. INTRODUCTION

This Appeal is from a Final Office Action mailed on August 6, 2003 (Paper No. 5), finally rejecting claims 1 and 3-27 of the present application, and an Advisory Action mailed on November 10, 2003 (Paper No. 7). Applicants filed a Notice of Appeal on December 12, 2003, and hereby submit this Appeal Brief.

II. REAL PARTY IN INTEREST

The real party in interest for the above-identified application is International Business Machines Corporation, the assignee of the entire right, title and interest in and to the subject application by virtue of an assignment of record in the U.S. Patent and Trademark Office at reel 010765, frame 0605.

III. RELATED APPEALS AND INTERFERENCES

There are no Appeals or Interferences known to Applicant, Applicants' representatives or the Assignee, which would directly affect or be indirectly affected by or have a bearing on the Board's decision in the pending Appeal.

IV. STATUS OF CLAIMS

Claims 1 and 3-27 are pending, stand rejected and are under appeal. The claims on appeal are set forth in the attached Appendix. Claims 1, 16 and 23 are independent claims. Claims 3-15 depend directly or indirectly from claim 1. Claims 17-22 depend directly or indirectly from claim 16. Claims 24-27 depend directly or indirectly from claim 23.

V. STATUS OF AMENDMENTS

No Amendments were filed subsequent to the Final Office Action.

VI. SUMMARY OF THE INVENTION

In general, the claimed inventions are directed to systems and methods for providing managed sharing of data between multiple consumers. For purposes of illustration, the claimed inventions will be described with reference to the exemplary embodiment of FIG. 5 of Applicants' specification (hereinafter "Spec."), and the corresponding description on page 21, line 18 – Page 25, line 2, of Spec.

With respect to the inventions of claims 1, 16 and 23, the exemplary embodiment of FIG. 5 depicts systems and methods for sharing data between multiple consumers, wherein a first queue (305) stores data that is received from a data source (303). A plurality of consumers (306) and (307) share data that is stored in the first queue (305). A scheduler (302) is provided for managing the storage and consumption of the data in the first queue (305) and for controlling the data source (303) and the plurality of consumers (306), (307) to control the amount of data stored in and consumed from the first queue (305). Each consumer in the system may be considered a data source that consumes data stored in a queue. For instance, consumer (303) is a data source that consumes data stored in a second queue (301) that is also controlled by the scheduler (302). Fig. 5 illustrates a general architecture for sharing data (such as audio data) between multiple consumers, which may be employed in various platforms, and which may be implemented via various hierarchical levels of consumers and queues, for example.

Each consumers (303), (304), (306), (307) performs a registration process with the scheduler (302). A registration process between a consumer and the scheduler (302) involves registering data requirements and priority requests of the consumer and the scheduler (302) assigns each consumer to a queue based on the registered data requirements. The scheduler (302) monitors the flow of data consumption and storage in the queues (301) and (305) and will prioritize data consumption of the first queue (305), for example, based on an amount of unread data of each of the consumers (306) and (307). The scheduler (302) manages the entire process chain by managing the CPU time and resources between different consumers of the different queues. For example, the scheduler (302) either favors or slows the consumers (e.g., speech processing engines) to balance the different queues. The priority afforded to a given consumer (e.g., queue), which is a source for other consumers, is influenced, for example, by both the state of the consumption of the queue and by the state of consumption of the queues that are fed by the given consumer. In addition, for distributed systems, the scheduler (302) will monitor the network delay/traffic when scheduling and managing the different queues and consumer processes so as to ensure, for example, efficient flow of network data to various consumers that are network-connected to a given queue.

VII. ISSUES

1. Claims 1, 3-6, 8-18, 20-25 and 27 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,519,686 to Woodring.

Thus, one issue on appeal is whether claims 1, 3-6, 8-18, 20-25 and 27 are anticipated by Woodring.

2. Claims 7, 19 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Woodring in further view of U.S. Patent No. 4,916,658 to Lee.

Thus, another issue on appeal is whether claims 7, 19 and 26 are rendered obvious by the combination of Woodring and Lee.

VIII. GROUPING OF CLAIMS

For Issue 1:

(i) Claims 9-15 are deemed to stand or fall with Claim 1 for purposes of the appeal, but claims 3-6 and 8 are separately patentable and do not fall with claim 1;

(ii) Claims 21 and 22 are deemed to stand or fall with claim 16 for purposes of the appeal, but claims 17, 18 and 20 are separately patentable and do not fall with claim 16; and

(iii) Claims 24, 25 and 27 are separately patentable and do not fall with claim 23.

For Issue 2:

Claims 7, 19 and 26 stand or fall with claims 1, 16 and 23, respectively.

IX. ARGUMENTS

A. At the very minimum, Woodring is Legally Deficient to Establish a *Prima Facie* Case of Anticipation Against Claims 1, 16 and 23

Under 35 U.S.C. § 102, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The **identical invention** must be shown in as complete detail as is contained in the claim. (See MPEP

§ 2131). The single prior art reference must disclose all of the elements of the claimed invention functioning essentially in the same manner (see, Shanklin Corp. v. Springfield Photo Mount Corp, 521 F.2d 609 (1st Cir. 1975)).

Applicants respectfully submitted that Woodring cannot sustain a *prima facie* case of anticipation against the claimed inventions and at the very minimum, fails to anticipate the inventions of claims 1, 16 and 23. For example, Applicants contend that Woodring does not disclose or suggest a *scheduler for managing the storage and consumption of the data in at queue and for controlling a data source and a plurality of consumers to control an amount of data that is stored in and consumed from the queue*, as essentially claimed in claims 1, 16 and 23. In fact, Applicants respectfully submit that the Examiner has misconstrued the teachings of Woodring as against the claimed inventions. The following argument will proceed with a brief description of Woodring, followed by a detailed explanation as to the impropriety of the anticipation rejections grounded on Woodring.

Woodring discloses in FIG. 4, for example, a system and method for enabling communication between a producer (310) and a plurality of consumers (320_0~320_{N-1}) via an IPC (interprocess communication) channel (330) with a shared memory (buffer (372)) (see, in general, Woodring's description of FIG. 4 in Col. 6, line 8 – Col. 8, line 31). The producer (310) and consumers (320) employ a plurality of software mechanisms to facilitate the synchronization, management and processing of an information stream between the producer (310) and the consumers (320). The IPC channel (330) comprises a storage manager (350) that stores a management data structure for the software mechanisms by which the producer and consumers communicate, as well as the information stream that is stored in a buffer (372) (see,

Col. 7, line 18, - Col. 8, line 5).

In the Final Office Action, Examiner's ground for anticipation of claims 1, 16, and 23 is premised, in part, on Examiner's interpretation of the "storage manager (350)" of Woodring as being essentially equivalent to the claimed "scheduler", which manages the storage and consumption of the data in at queue and which controls a data source and a plurality of consumers to control an amount of data that is stored in and consumed from the queue. Although Woodring discloses an IPC channel system (330) comprising a storage manager (350) for managing data that is stored in a buffer storage area (372), Examiner has not provided a reasonable basis as to how the storage manager (350) manages by *controlling the data source (producer) and the plurality of consumers to control the amount of data stored in and consumed from the queue.*

Indeed, on a fundamental level, Woodring expressly teaches that synchronization, management and processing of the information stream between the producer (310) and the consumers (320) is achieved via the producer-side interface (410) and a consumer-side interface (450) (see, FIG. 5), which comprise software mechanisms that are implemented as handles to objects that are shared by the producer and consumers (see, e.g., Col. 6, lines 18-32; and Col. 8, lines 31 et seq.). Further, Woodring expressly teaches that the storage manager (350) simply stores the management data structure that is used by the producer and consumer for purposes of communication. In other words, it is the producer and consumers that implement methods for controlling and managing the interprocess communication, and on *a fundamental level*, there is *no* notion that the storage manager (350) actively *controls the data source (producer) and the*

plurality of consumers to control the amount of data stored in and consumed from the queue, as contemplated with the claimed inventions.

In the Response to Arguments (Page 2 of the Final Office Action), Examiner contends that the producer (310) (data source) is "*controlled*" by an FBSEM mechanism (376) of the storage manager (350), which is used to signal to the producer that one or more buffers in the buffer storage (372) are free and available for further use (Col. 7, lines 61-65). Applicants respectfully disagree with Examiner's characterizations. Indeed, Examiner has not explained how the FBSEM mechanism (376) actually "*controls the data source .. to control the amount of data stored in a queue*" as essentially claimed. The FBSEM (376) is merely a notification mechanism that enables the producer to actually determine (via the producer FBSEM mechanism (316), Fig. 4) what buffers (multiple queues) are/are not available. But clearly, the FBSEM mechanism does not *control the data source* to control *the amount of data stored in a queue.*

Furthermore, it is respectfully submitted that Examiner's reliance on the MUTEX mechanism (374) as "controlling the producer" is misplaced. The MUTEX mechanism (374) is nothing more than a mechanism to prevent conflicting accesses by providing mutually exclusive access by the producer (310) and consumers (320) to the management data structures **with the exception of the buffer storage area** (see, e.g., Col. 7, lines 52-55). Thus, Examiner cannot reasonably contend that the MUTEX mechanism provides a means to *control the data source* to control *the amount of data stored in a queue.* In fact, on Pages 2-3 of the Final Office Action, the Examiner argues that the MUTEX (374) "controls the producer by placing a requirement on the producer to acquire exclusive ownership ... before accessing management data for the buffer storage ..." . However, Examiner does not explain how such MUTEX mechanism (374)

operates to *control the data source* to control *the amount of data stored in a queue*, as essentially claimed in claims 1, 16 and 23.

Moreover, in the Response to Arguments, it is respectfully submitted that Examiner has not provided a reasonable basis for the contention that *"the storage manager 350 also includes a variety of mechanisms to control the clients (consumers) as the received data from the buffer storage 372..."* (see page 3 of the Final Office). Again, Examiner fails to specifically explain how Woodring discloses *controlling the plurality of consumers to control the amount of data consumed from a first queue*, as essentially claimed in claims 1, 16 and 23.

In fact, Examiner's reliance on the mail slots 340_0-340_N of the IPC channel (330) is misplaced. These mail slots are not part of, or controlled by the storage manager (350), as is evident from Fig. 4, but rather controlled directly the producer (310). The mail slots are used by the producer (310) to notify the consumers of the arrival of an information stream (see Col. 7, lines 1-5). Examiner points to other "management data structures" in Woodring Col. 7, lines 19-39, but provides no explanation how such structures are used to *control the consumers to control the amount of data consumed from a queue*, as claimed. By way of example, Examiner cites "buffer masks", but buffer masks 364 are nothing more than bit masks that indicate which clients or clients have reference to a given buffer (see Col. 7, lines 47-51). Again, Examiner does not explain how such mechanism controls the consumers, much less how such mechanism controls the consumers to control the amount of data consumed from a queue.

Accordingly, for at least the reasons given above, claims 1, 16 and 23 are patentably distinct and patentable over Woodring. Further, since claims 9-15 depend from claim 1 and

claims 21 and 22 depend from claim 16, such claims are patentably distinct and patentable over Woodring *at least* for the reasons given above for respective base claims 1 and 16.

B. Woodring is Legally Deficient to Establish a *Prima Facie* Case of Anticipation Against Claims 3-6, 8, 17, 18, 20, 24, 25 and 27

(i) Claim 3:

Woodring clearly does not disclose or suggest the invention of claim 3. For claim 1 above, Examiner construes the storage manager (350) as a "scheduler" (see, Page 5 of the Final Office Action) and construes the producer (310) as a "data source" that outputs data stored in a buffer (372) (or "first queue") (see, Page 4 of the Final Office Action.). Claim 3 recites *wherein the data source comprises a consumer that consumes data stored in a second queue that is controlled by the scheduler*. Given Examiner's construction of claim 1, the Examiner would essentially have to explain how Woodring discloses that the producer (310) is a consumer that consumes data in another queue that is controlled by the storage manager (350).

However, Woodring clearly does not disclose or remotely suggest that the storage manager (350) of the IPC channel (330) controls or otherwise manages a second queue, much less that the producer (310) consumes data from a second queue managed by the storage manager (350). In fact, Examiner's basis for rejecting claim 3 (on page 7 of the Final Office Action) is not clear, and appears to be irrelevant with respect to the claimed invention.

(ii) Claims 4-6, 17, 18, 24 and 25:

The inventions of claims 4-6, 17, 18 , 24 and 25 are generally directed to methods for consumers to register data requirements and priority requests with the scheduler, and the

scheduler assigning the consumers to a queue based on the registered data requirements. The Examiner relies on Col. 8, line 50 - Col. 9, line 5 as disclosing the claimed inventions. It is respectfully submitted that Examiner's reliance is misplaced.

To begin, Examiner's characterization (on Page 7 of the Final Office Action) of a "priority request" as relating to a "desired sample rate" and to a "key attribute" is erroneous. Indeed, "priority" refers to the priority given to different consumers over other consumers for prioritizing access to data in a queue (see, e.g., Spec. Page 24). In contrast, the "desired sample rate" in Woodring relates to a mechanism by the consumer-side interface for specifying a desired sample notification rate at which to be notified of a buffer arrival (see, e.g., Col. 10, lines 30-33), which relates to a mailbox mechanism (see, e.g., Col 8, lines 24-31). Further, the "key attribute" relates to a mechanism by the consumer-side interface for specifying a key attribute of an information stream for matching before notification (see, e.g., Col. 10, lines 34-37).

Even assuming, arguendo, that such mechanisms relate to "priority requests", such specifiers are processed/accessed by the producer-side interface (410) for communicating with the consumers (see, e.g., Col. 6, lines 18-23). There is simply no notion in Woodring regarding a consumer registering data requirements and priority requests with a "scheduler", much less a scheduler that assigns the consumers to a queue based on the registered requirements, as contemplated by the claimed inventions.

(iii) Claims 8, 20 and 27:

With respect to claim 8, 20 and 27, Woodring does not disclose or suggest *a scheduler that prioritizes data consumption of the first queue based on an amount of unread data of each of the plurality of consumers.* As explained on pages 26-27 of Applicants' Spec., for example, the

scheduler (302) manages consumption of the queue by the consumers by prioritizing and slowing down the different consumers to balance the queue consumption and avoid queue overflow.

The Examiner relies on Col. 7, lines 13-18 and lines 32-35 as disclosing the claimed invention. However, upon review of the cited sections, it is clear that there is nothing that even remotely discusses "prioritizing" data consumption by consumers, much less a scheduler that prioritizes consumption. For instance, in stark contrast, Col. 7, lines 13-18 of Woodring states that multiple consumers "read data out of the buffer simultaneously without holding any memory locks of the buffer storage while reading the data". There is simply no reasonable basis for construing such teaching as "prioritizing data consumption", especially since the cited section appears to describe a process that is an exact opposite of "prioritizing".

C. The Claim Rejections Under 35 U.S.C. § 103 are Legally Deficient

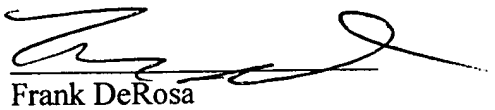
The obviousness rejections of claims 7, 19 and 26 as outlined in Section VII above are based, in part, on Examiner's contention that Woodring discloses the inventions of claims 1, 16 and 23 from which claims 7, 19 and 26 respectively depend. Thus, without elaboration, it is clear that each of the obviousness rejections are legally deficient on their face because Woodring fails to disclose claim elements of claims 1, 16 and 23 as discussed above.

D. Conclusion

The teachings of Woodring are fundamentally different from the claimed inventions and, consequently, Woodring cannot legally support a *prima facie* case of anticipation or obviousness,

either alone or in combination with Lee. Accordingly, it is respectfully requested that the Board reverse the claim rejections under 35 U.S.C. §§ 102(e) and 103(a).

Respectfully submitted,



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APPENDIX A

1. A system for sharing data between multiple consumers, comprising:

a first queue for storing data;

a data source for outputting the data that is stored in the first queue;

a plurality of consumers each sharing the data stored in the first queue; and

a scheduler for managing the storage and consumption of the data in the first queue and for controlling the data source and the plurality of consumers to control the amount of data stored in and consumed from the first queue.

2. (Canceled)

3. The system of claim 1, wherein the data source comprises a consumer that consumes data stored in a second queue that is controlled by the scheduler.

4. The system of claim 1, wherein each of the plurality of consumers performs a registration process with the scheduler.

5. The system of claim 4, wherein the registration process between a consumer and the scheduler involves registering data requirements and priority requests of the consumer.

6. The system of claim 5, wherein the scheduler assigns each of the plurality of consumers to the first queue based on the registered data requirements.

7. The system of claim1, wherein the scheduler maintains an IN pointer for the data source and one OUT pointer for each of the plurality of consumers to manage the flow of the data in and out of the first queue.

8. The system of claim 1, wherein the scheduler prioritizes data consumption of the first queue based on an amount of unread data of each of the plurality of consumers.

9. The system of claim 1, wherein the system is implemented in an embedded engine.

10. The system of claim 1, wherein the system is implemented in a telephony system.

11. The system of claim 1, wherein the first queue stores audio data output from an audio system.

12. The system of claim 1, wherein the first queue and the plurality of consumers are distributed over a network, and wherein the scheduler monitors data traffic over the network to manage and schedule data communication between the first queue and the plurality of consumers over the network.

13. The system of claim 1, wherein the system is dynamically re-programmed by one of the plurality of consumers or a new consumer.

14. The system of claim 1, wherein the system is dynamically re-programmed to include one of a conversational engine or a conversational function.

15. The system of claim 1, wherein the system is dynamically re-programmed by a procedural object.

16. A method for sharing data between multiple consumers, comprising the steps of:

storing data received from a data source in a first queue;

sharing the data in the first queue between a plurality of consumers; and

managing the storage and consumption of the data in the first queue, wherein managing comprises controlling the data source and the plurality of consumers to control the amount of data stored in and consumed from the first queue.

17. The method of claim 16, wherein the step of sharing comprises the steps of:

registering data requirements of each of the plurality of consumers; and

assigning the plurality of consumers to the first queue based on the registered data requirements.

18. The method of claim 17, wherein the step of registering further comprises registering priority requests by at least one of the plurality of consumers.

19. The method of claim 17, wherein the step of managing comprises the step of maintaining an IN pointer for data storage in the first queue and one OUT pointer for each of the registered plurality of consumers to determine the amount of the data flow in and out of the first queue.

20. The method of claim 17, further comprising the step of prioritizing data consumption of the first queue based on an amount of unread data in the first queue of each of the plurality of consumers.

21. The method of claim 16, wherein the method is implemented in an embedded engine.

22. The method of claim 16, wherein the method is implemented in a telephony system.

23. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for sharing data between multiple consumers, the method comprising the steps of:

storing data received from a data source in a first queue;

sharing the data in the first queue between a plurality of consumers; and

managing the storage and consumption of the data in the first queue, wherein managing comprises controlling the data source and the plurality of consumers to control the amount of data stored in and consumed from the first queue.

24. The program storage device of claim 23, wherein the instructions for performing the step of sharing comprise instructions for performing the steps of:

registering data requirements of each of the plurality of consumers; and

assigning the plurality of consumers to the first queue based on the registered data requirements.

25. The program storage device of 24, wherein the instructions for performing the step of registering further comprise instructions for performing the step of registering priority requests by at least one of the plurality of consumers.

26. The program storage device of 24, wherein the instructions for performing the step of managing comprise instructions for performing the step of maintaining an IN pointer for data storage in the first queue and one OUT pointer for each of the registered plurality of consumers to determine the amount of the data flow in and out of the first queue.

27. The program storage device of claim 24, further comprising instructions for performing the step of prioritizing data consumption of the first queue based on an amount of unread data of each of the plurality of consumers.